

CLAIM AMENDMENTS

This listing of claims replaces all prior versions and listings of claims in the application:

1. (currently amended) A method of protecting a female reproductive system against an artificial insult comprising: administering to a female patient a composition comprising an agent that antagonizes one or more acid sphingomyelinase (*ASMase*) gene products, in an amount sufficient to protect said female reproductive system from destruction caused by said artificial insult, wherein said administration is *in vivo* or *ex vivo*.

2. (original) The method of claim 1, wherein said artificial insult comprises chemical insult, radiation insult, surgical insult, or a combination thereof.

3. canceled

4. (original) The method of claim 2, wherein said chemical insult comprises cytotoxic factors, chemotherapeutic drugs, hormone deprivation, growth factor deprivation, cytokine deprivation, cell receptor antibodies, or a combination thereof.

5. (original) The method of claim 4, wherein said chemotherapeutic drug comprises; 5FU, vinblastine, actinomycin D, etoposide, cisplatin, methotrexate, doxorubicin, or a combination thereof.

6. (original) The method of claim 2, wherein said radiation insult comprises ionization radiation, x-ray, infrared radiation, ultrasound radiation, heat, or a combination thereof.

7. (original) The method of claim 2, wherein said radiation insult comprises an invasive radiation therapy, a non-invasive radiation therapy, or both.

8. (original) The method of claim 1, wherein said female reproductive system comprises ovaries.

9. (original) The method of claim 1, wherein said female reproductive system comprises oocytes.

10. (currently amended) The method of claim 1, wherein said female patient is in a reproductive age.

11. (currently amended) The method of claim 1, wherein said female patient is in a pre-reproductive age.

12. (currently amended) The method of claim 1, wherein said female patient is in a post-reproductive age.

13. (original) The method of claim 1, wherein said agent comprises a small molecule compound.

14. (original) The method of claim 13, wherein said small molecule compound comprises lysophospholipid.

15. (original) The method of claim 14, wherein said lysophospholipid is a sphingolipid compound, or an analog thereof.

16. (original) The method of claim 15, wherein said sphingolipid compound is sphingosine-1-phosphate, or an analog thereof.

17. (original) The method of claim 1, wherein said composition is administered at least once from about fifteen days to about two days prior to exposure to said insult.

18. (original) The method of claim 17, wherein said composition is administered at about seven days to about two hours prior to exposure to said insult.

19. canceled

20. (original) The method of claim 1, wherein said composition is administered orally, intravascularly, intraperitoneally, subcutaneously, intramuscularly, intra-uterine, intra-ovarian, rectally, topically, or a combination thereof.

21. (original) The method of claim 1, wherein said artificial insult is a result of a therapy against a disease or a disorder.

22. (original) The method of claim 21, wherein said disease or disorder comprises, cancer, rheumatoid arthritis, angioplasty, or restenosis.

23. (original) The method of claim 22, wherein said cancer comprises; colon carcinoma, pancreatic cancer, breast cancer, ovarian cancer, fibrosarcoma, myxosarcoma, liposarcoma, chondrosarcoma, osteogenic sarcoma, chondroma, angiosarcoma, endotheliosarcoma, lymphangiosarcoma, lymphangioendotheliosarcoma, synovioma, mesothelioma, Ewing's tumor, leiomyosarcoma, rhabdomyosarcoma, squamous cell carcinoma, basal cell carcinoma, adenocarcinoma, sweat gland carcinoma, sebaceous gland carcinoma, papillary carcinoma, papillary adenocarcinomas, cystadenocarcinoma, medullary carcinoma, bronchogenic carcinoma, renal cell carcinoma, hepatoma, bile duct carcinoma, choriocarcinoma, seminoma, embryonal carcinoma, Wilms' tumor, cervical cancer, lung carcinoma, small cell lung carcinoma, bladder carcinoma, epithelial carcinoma, glioma, astrocytoma, medulloblastoma, craniopharyngioma, ependymoma, pinealoma, hemangioblastoma, acoustic neuroma, oligodendroglioma, meningioma, melanoma, neuroblastoma, retinoblastoma, acute lymphocytic leukemia and acute myelocytic leukemia, chronic leukemia and polycythemia vera, lymphoma (Hodgkin's disease and non-Hodgkin's disease), multiple myeloma, Waldenstrom's macroglobulinemia, heavy chain diseases, or a combination thereof.

24-26. canceled

27. (currently amended) A method of preserving, enhancing, or reviving ovarian function in mammals comprising: administering to a female mammal a composition comprising sphingosine-1-phosphate, or an analog thereof to said mammal in an amount effective to preserve, enhance, or revive ovarian function.

28. (original) The method of claim 27, wherein said mammal is in a reproductive age.

29. (original) The method of claim 27, wherein said mammal is in a pre-reproductive age.

30. (original) The method of claim 27, wherein said mammal is in a post-reproductive age.

31. (original) The method of claim 27, wherein said ovarian function comprises fertility, or normal menstrual cyclicity.

32. (original) The method of claim 27, wherein said mammal is a woman.

33. (previously presented) A method of preventing or ameliorating menopausal syndromes in women, comprising administering to women, at predetermined intervals, a

composition comprising sphingosine-1-phosphate, or an analog thereof in an amount effective to prevent or ameliorate at least one menopausal syndrome.

34. (original) The method of claim 33, wherein said women are pre-menopausal or post-menopausal women.

35. (original) The method of claim 33, wherein said menopausal syndromes comprise somatic disorders, cognitive disorders, emotional disorders, or a combination thereof.

36. (original) The method of claim 33, wherein said predetermined interval comprises daily, weekly, biweekly, or monthly intervals.

37-45. canceled

46. (previously presented) A method for protecting a female reproductive system from damage caused by treatment for a disease, disorder, or condition, comprising administering to a mammalian female patient in need thereof (a) a treatment effective to treat a disease, disorder, or condition, wherein said treatment is selected from the group consisting of chemical treatment, radiological treatment, surgical treatment, and combinations thereof and (b) a composition comprising an agent that antagonizes one or more acid sphingomyelinase (*ASMase*) gene products, in an amount sufficient to protect the reproductive system of said female from damage caused by said chemical treatment, radiological treatment, surgical treatment, or a combination thereof.

47. (previously presented) The method of claim 46, wherein said chemical treatment comprises administration of cytotoxic factors, chemotherapeutic drugs, hormone deprivation, growth factor deprivation, cytokine deprivation, cell receptor antibodies, or a combination thereof.

48. (previously presented) The method of claim 47, wherein said chemotherapeutic drug comprises; 5FU, vinblastine, actinomycin D, etoposide, cisplatin, methotrexate, doxorubicin, or a combination thereof.

49. (previously presented) The method of claim 46, wherein said radiation treatment comprises treatment with ionization radiation, x-ray, infrared radiation, ultrasound radiation, heat, or a combination thereof.

50. (previously presented) The method of claim 46, wherein said agent comprises a small molecule compound.

51. (previously presented) The method of claim 50, wherein said small molecule compound comprises lysophospholipid.

52. (previously presented) The method of claim 51, wherein said lysophospholipid is a sphingolipid compound, or an analog thereof.

53. (previously presented) The method of claim 52, wherein said sphingolipid compound is sphingosine-1-phosphate, or an analog thereof.

54. (previously presented) The method of claim 46, further wherein said composition is administered prior to said treatment.

55. (previously presented) The method of claim 54, wherein said composition is administered at least once from about fifteen days to about two days prior to said treatment.

56. (previously presented) The method of claim 54, wherein said composition is administered at about seven days to about two hours prior to said insult treatment.

57. (previously presented) The method of claim 46, further wherein said composition is administered prior to and during said treatment.

58. (previously presented) The method of claim 46, further wherein said composition is administered during said treatment.

59. (previously presented) The method of claim 46, wherein said composition is administered before, during, and/or after said treatment.

60. (previously presented) The method of claim 46, wherein said composition is administered orally, intravascularly, intraperitoneally, subcutaneously, intramuscularly, intra-uterine, intra-ovarian, rectally, topically, or a combination thereof.

61. (previously presented) The method of claim 46, wherein said a disease, disorder, or condition comprises, cancer, rheumatoid arthritis, angioplasty, or restenosis.

62. (currently amended) A method of protecting a female reproductive system against a natural insult comprising: administering to a mammalian female a composition comprising an agent that antagonizes one or more acid sphingomyelinase (*ASMase*) gene products, in an amount sufficient to protect said female reproductive system from pre-mature aging or destruction caused by said natural insult, wherein said administration is *in vivo* or *ex vivo*.

63. (previously presented) The method of claim 62, wherein said female reproductive system comprises ovaries and/or oocytes.

64. (previously presented) The method of claim 62, wherein said female is in a reproductive age.

65. (previously presented) The method of claim 62, wherein said female is in a pre-reproductive age.

66. (previously presented) The method of claim 62, wherein said female is in a post-reproductive age.

67. (previously presented) The method of claim 62, wherein said agent comprises a small molecule compound.

68. (currently amended) The method of claim ~~62~~ 67, wherein said small molecule compound comprises lysophospholipid.

69. (currently amended) The method of claim ~~62~~ 68, wherein said lysophospholipid is a sphingolipid compound, or an analog thereof.

70. (currently amended) The method of claim ~~62~~ 69, wherein said sphingolipid compound is sphingosine-1-phosphate, or an analog thereof.

71. (previously presented) The method of claim 62, wherein said composition is administered orally, intravascularly, intraperitoneally, subcutaneously, intramuscularly, intra-uterine, intra-ovarian, rectally, topically, or a combination thereof.

72. (new) The method of claim 62 wherein said natural insult is a consequence of aging, genetic background, physiological factors, environmental factors, or a combination thereof.

73. (new) The method of claim 72, wherein said composition is administered regularly for an indefinite period of time.

74. (new) The method of claim 1, wherein the artificial insult is a chemical insult and the chemical insult is a chemotherapeutic drug.

75. (new) The method of claim 74, wherein said agent comprises a small molecule compound.

76. (new) The method of claim 75, wherein said small molecule compound comprises lysophospholipid.

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77. (new) The method of claim 76, wherein said lysophospholipid is a sphingolipid compound, or an analog thereof.

78. (new) The method of claim 77, wherein said sphingolipid compound is sphingosine-1-phosphate, or an analog thereof.

79. (new) The method of claim 62 wherein said natural insult is a consequence of aging.

80. (new) The method of claim 1, wherein the artificial insult is a chemical insult and the chemical insult is hormone deprivation or growth factor deprivation.
